



#12 / Appeal Brief

Docket No.: 20421-00059-US
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Bryan K. Bullis

Application No.: 09/547,369

Confirmation No.: 4270

Filed: April 11, 2000

Art Unit: 2154

For: LOCAL MAC ADDRESS LEARNING IN
LAYER 2 FRAME FORWARDING

Examiner: V. D. Vu

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Technology Center 2100

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief is in support of the appeal filed in this case on January 20, 2004.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. § 1.192 and M.P.E.P. § 1206:

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I. REAL PARTY IN INTEREST

The real party in interest for this appeal is the International Business Machines Corporation, Assignee of the above-identified patent application.

I. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to the Appellants' legal representatives which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

II. STATUS OF CLAIMS

The claims on appeal are Claims 1-20. Claims 1-5, 7-12, 14-18 and 20 are rejected and Claims 6, 13 and 19 are objected to.

III. STATUS OF AMENDMENTS

No amendments have been submitted after the Final Rejection.

IV. SUMMARY OF INVENTION

A network switch and method is configured to learn MAC addresses locally at each egress or target port of a network. As shown in Fig. 2, the network comprises a series of switches 100, each having a plurality of cards 202 through 204 through which frames and control messages flow. Each card 202, 203 and 204 includes a local MAC database 208 and computer executable picocode instructions which are executed by a forwarding processor in the switch to forward the frame and learn MAC addresses.

When a frame such as 211 enters the receiving port 210, a forwarding processor 207 executes the picocode to implement the process of Fig. 3. As shown in Fig. 3, the forwarding processor performs a lookup in the local MAC address database 208 for the destination address in the frame. When the address is found, the frame is forwarded via connecting bus 201 to the card containing the target port. If the address is not found, the frame is sent to all possible target ports.

A card having a target port performs the MAC address learning function at its port. If the source address contained in the frame is not found in its database, the processor updates the source address and respective port information to a local MAC database at the target port. By local learning source addresses at a destination port for the forwarded frames, the system eliminates any unnecessary duplication of a central database at local sites. Having the learned information available permits messages to be returned and forwarded using the locally learned information. In this way, addresses learned at a target port can be used to forward a reply frame to the origination port and avoid the unnecessary duplication of databases, and otherwise preserve bandwidth which would be needed for a centralized MAC address.

V. ISSUES

The issues to be decided on appeal are:

- (A) Whether or not claims 1-4, 8-11 and 14-17 are anticipated under 35 U.S.C. § 102(e) by Chiang (U.S. Patent 6,445,709);
- (B) Whether claims 5, 7, 12, 18 and 20 are obvious over Chiang in view of Brice (U.S. Patent 4,825,206) under 35 U.S.C. § 103(a);
- (C) Whether claims 8-11 are patentable under 35 U.S.C. § 103 over Chiang (U.S. 6,445,709) in view of Holt (U.S. Patent 5,790,545); and
- (D) Whether claim 12 is patentable under 35 U.S.C. § 103 in view of Chiang, Holt and Brice, Jr.

I. GROUPING OF CLAIMS

Claims 1, 8, 9 and 14 stand and fall together. Claims 2 and 15 stand and fall together. Claims 3, 10 and 16 stand and fall together. Claims 4, 11 and 17 stand and fall together. Claims 5, 7, 12 and 13 stand and fall together. Claims 18 and 20 stand and fall together.

VI. ARGUMENTS

The Rejection of Claims 1-4, 8-11 and 14-17 Under 35 U.S.C. § 102(e) Is In Error

The applicable legal standard for determining whether or not claims are invalid under 35 U.S.C. § 102 is set forth in MPEP § 2131.01, which summarizes the case law on this topic as follows:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

It is clear that the cited reference to Chiang (U.S. Patent 6,445,709) does not disclose or suggest each and every element. Specifically there is no description of any means for learning MAC addresses locally at a target port. The Examiner has failed to identify any portion of Chiang which demonstrates any learning of MAC addresses at a target port. The Examiner's response to the undersigned's foregoing contention can be summarized as follows, from Item No. 7 in the final rejection:

The Examiner submits that the alleged limitation is still not sufficient to define the invention over Chiang (U.S. Patent 6,445,709). In Chiang the routing tables provided with a multiport switch and hence it is considered to be local to all the ingress and target point ports. (emphasis added)

The disclosed routing tables of Chiang, are not structures which are capable of learning source addresses for messages which reach a target port. Further, in reviewing Chiang, it is uncertain that there are routing tables at each target port. It is noted that the Office Action alleges with respect to the rejection of claims 8-11, under Item 4 of the final rejection, that:

Chiang does not teach providing routing table at each target port, which, as stated above means that the claim is not anticipated.

As the foregoing conclusion concerning routing tables contained in the final rejection is conjecture unsupported by the literal teachings of the reference, the reference fails to disclose the claimed subject matter.

It is submitted that the rejection cannot be sustained unless, per for foregoing MPEP section, the reference suggests every element of the claim. Without such support in the reference, the rejection is untenable.

Claims 2 and 15 include the limitation of: recording said source MAC address along with a port connected to said first device in said local database if not present. This feature as well is not disclosed in the cited reference. If the cited reference stands for the proposition that MAC addresses are learned locally at the target port (a position which is specifically traversed, see above), the reference does not demonstrate that the MAC address, along with the identify of the port connected to the device, be stored in the local data base.

Per claims 3, 10 and 16, the locally learned MAC address can be used to forward frames, such as reply frames, originating from the target port to the original, source device.

The final rejection does not contain any allegation that the reference in fact discloses these additional limitations which is required in order to anticipate these claims.

Other limitations which cannot be found in Chiang include those contained claims 4, 11 and 17 which require an aging of the MAC addresses locally, claims 5, 12 and 13 requiring that a predetermined number of MAC addresses be bundled into a reply in response to a report request and claims 18 and 20 wherein the replies are compiled in an aggregate database.

The Rejection of Claims 5, 7, 12, 18 and 20 Under 35 U.S.C. § 103As Being Unpatentable Over Chiang in view of Brice, Jr., et al. (U.S. Patent 4,825,206) Is In Error

The Brice, Jr. et al. reference describes a system which operates between nodes of a communication network. The status of a node is reported to other nodes in the communications network when an attempt is made to contact the node. When routes are created over the

network, a routing table contains an indication of the available route, as well a failure notification when the route cannot be set up as requested.

The foregoing rejected claims each require that MAC addresses be bundled when a request is received to forward the MAC addresses to a control point. In this way, a global supervision can be maintained over those addresses which are active on the work. In reviewing the Brice reference, there doesn't appear to be any indication of such a bundling process and, therefore, the rejection fails to establish a *prima facia* case of obviousness.

In accordance with MPEP § 2142, the Examiner bears the initial burden of factually supporting any *prima facia* conclusion of obviousness. If the Examiner does not produce a *prima facia* case, the Applicant is under no obligation to submit evidence of nonobviousness.

The standard for a case of *prima facia* obviousness is set forth in MPEP § 2142 as follows:

The legal concept of *prima facie* obviousness is a procedural tool of examination which applies broadly to all arts. It allocates who has the burden of going forward with production of evidence in each step of the examination process. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Saunders*, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); *In re Tiffin*, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968).

To reach a proper determination under **35 U.S.C. 103**, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

According to the foregoing, the prior art fails to establish a *prima facia* case of obviousness since the combination of references does not suggest all the claim limitations. Additionally, there isn't any suggestion or motivation to combine the references outside of the teachings of the present application, without an impermissible resort to the Applicant's disclosure. Since the record as a whole fails to disclose the learning of MAC addresses at a target port, they cannot render the claims as a whole unobvious.

The Rejection Of Claims 8-11 Under 35 U.S.C. § 103 Over Chiang In View Of Holt Is Also Believed To Be In Error

According to the Office Action:

Holt discloses a multiport switch utilizing such distributed routing tables where each a target (ingress) port comprising a processor and a memory configured for storing packet information for setting up a routing/connection table, routing the packet from the ingress port to the target port (see Holt, Fig. 19 and column 14, line 50 through column 15, lines 42).

The foregoing passage from Holt describes a protocol which stores information packets in an ingress memory, and updates queue status information between the ingress and egress ports. When a connection identifier is received from the scheduler of an egress port, the packets are retrieved from the corresponding queue in the ingress memory and forwarded to the egress port. The reference does not disclose at the cited passage any learning of a source address and storing it them in any database associated with a target port or egress port. Accordingly, it is not seen how a combination of Holt with Chiang can create a *prima facia* case of obviousness under the foregoing standard of MPEP § 2142. In particular, if one "steps backward in time and into the shoes worn by the hypothetical person of ordinary skill in the art" the factual information in the references does not add up to a suggestion of the claimed invention as a whole.

The Rejection Of Claim 12as Being Unpatentable Under 35 U.S.C. § 103 In View
Of Chiang (U.S. Patent 6,445,709) And Holt, Et Al. (U.S. Patent 5,790,545) In
View Of Brice, Jr. Et Al. (U.S. Patent 4,825,206) Is Untenable

The limitations of claim 12 remain unanticipated and unsuggested in the combination of these references. Specifically, this claim requires database handling processor to bundle the predetermined number of learned MAC addresses into a reply in response to a report request. Accordingly, in the foregoing requirements for a case of *prima facia* obviousness are not met if the record fails to demonstrate these limitations.

VII. SUMMARY

The honorable Board of Patent Appeals and Interferences is requested in light of the foregoing to reverse the final rejection and remand the application to the Examiner for issuance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 09-0457, under Order No. 20135-00315-US from which the undersigned is authorized to draw.

Dated:

3/30/04

Respectfully submitted,

By 
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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/9547,369

1. (Original) A method comprising:
receiving a data frame on a receive port from a first device connected to a network, said data frame including a source media access control (MAC) address for said first device and a destination MAC address for a second device connected to said network;
forwarding said data frame to a target port corresponding to said second device; and
learning said source MAC address locally to said target port.
2. (previously amended) The method of claim 1, said learning step comprising:
determining whether said source MAC address is present in a database local to said target port; and
recording said source MAC address along with a port connected to said first device in said local database if not present.
3. (Original) The method of claim 1, further comprising performing frame forwarding using said locally-learned MAC address.
4. (Original) The method of claim 2, further comprising aging said MAC address locally.

5. (Original) The method of claim 2, further comprising:
bundling a pre-determined number of said MAC addresses into a reply in
response to a report request from a control point; and
transmitting said reply to said control point.

6. (Original) The method of claim 5, further comprising:
compiling a plurality of said replies into an aggregate database; and
reporting said aggregate database to a network user or manager.

7. (Original) The method of claim 5, wherein said report request is
issued at time intervals which are configurable by a network user.

8. (previously amended) A network switch comprising:
a target port connected to a destination network device;
processors and a MAC address database local to said target port;
an ingress port;
said processors programmed to perform MAC address learning locally to
said target port source addresses and source ports contained in a frame received
from said ingress port.

9. (previously amended) A network switch comprising:
a target port connected to a network device;
processors and a MAC address database local to said target port;
an ingress port;
said processors programmed to perform MAC address learning locally to
said target port of source addresses and source ports contained in frames received
by said ingress port.

10. (Original) The network switch of claim 8, said processors programmed to perform frame forwarding using said local MAC address database.

11. (Original) The network switch of claim 8, said processors programmed to perform aging of said local MAC address database.

12. (Original) The network switch of claim 8, a database-handling processor of said processors programmed to bundle a pre-determined number of said MAC addresses into a reply in response to a report request from a control point included on said switch, and transmit said reply to said control point.

13. (Original) The network switch of claim 12, said control point compiling a plurality of said replies into an aggregate database and reporting said aggregate database to a network user or manager.

14. (Original) A computer-usable medium storing computer-executable instructions, said instructions when executed by a processor implementing a method comprising:

receiving a data frame on a receive port from a first device connected to a network, said data frame including a source media access control (MAC) address for said first device and a destination MAC address for a second device connected to said network;

forwarding said data frame to a target port corresponding to said second device; and

learning said source MAC address locally to said target port.

15. (Original) The computer-usable medium of claim 14, said learning step comprising:

determining whether said source MAC address is present in a database local to said target port; and

recording said source MAC address in said local database if not present.

16. (Original) The computer-readable medium of claim 14, said method further comprising performing frame forwarding using said locally-learned MAC address.

17. (Original) The computer-readable medium of claim 14, said method further comprising aging said MAC address locally.

18. (Original) The computer-readable medium of claim 14, said method further comprising:

bundling a pre-determined number of said MAC addresses into a reply in response to a report request from a control point; and

transmitting said reply to said control point.

19. (Original) The computer-readable medium of claim 18, said method further comprising:

compiling a plurality of said replies into an aggregate database; and reporting said aggregate database to a network user or manager.

20. (Original) The computer-readable medium of claim 18, wherein said report request is issued at time intervals which are configurable by a network user.



TRANSMITTAL OF APPEAL BRIEF		Docket No. 20421-00059-US	
In re Application of: Bryan K. Bullis			
Application No. 09/547,369-Conf. #4270	Filing Date April 11, 2000	Examiner V. D. Vu	Group Art Unit 2154
Invention: LOCAL MAC ADDRESS LEARNING IN LAYER 2 FRAME FORWARDING			
<u>TO THE COMMISSIONER OF PATENTS:</u>			
Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: <u>January 20, 2004</u>			
The fee for filing this Appeal Brief is <u>330.00</u> .			
<input checked="" type="checkbox"/> Large Entity		<input type="checkbox"/> Small Entity	
<input type="checkbox"/> A check in the amount of _____ is enclosed.			
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Dated: <u>March 30, 2004</u>			
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